

Water Management Options Overview Methodology Used For Bulletin 160-98

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Purpose of This Presentation

- Familiarize the Advisory Committee with the methodology used to evaluate options in Bulletin 160-98
- Identify general issues and comments that were raised regarding Bulletin 160-98
- Identify issues that must be resolved early in the 2003 Water Plan Update process

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This paper is intended to provide the foundation upon which a series of more detailed discussion papers can be developed. Each discussion paper will elaborate on the critical issues regarding the development of the 2003 update that must be addressed within the next two or three months. In particular, Part III of this presentation provides a starting point for potential discussion paper topics.

Presentation Format

Part I - "What We Did" :

- A.) Regional Options Evaluation
- B.) Statewide Options Evaluation

Part II - "What We Heard": General Feedback Received on Bulletin 160-98

Part III - "What We need": Issues that must be addressed early in the 2003 Water Plan Update process

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Regional Options – Produce benefits within a given hydrologic or political region

Statewide Options – Produce benefits for more than one region

What is a Water Management Option?

- A measure that may be taken to either reduce water demand or augment water supply to minimize environmental, economic or social impacts of water shortages.

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Options Evaluation Objective

- Produce reconnaissance-level regional water management plans that will help meet reliability needs in an environmentally sensitive and cost-effective manner

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Part I
"What We Did"
Regional Options Evaluation Overview

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- This section highlights the methods used in the development of Bulletin 160-98. It is intended to provide base information for Advisory Committee use in the 2003 Water Plan Update Process. It is not intended to be a roadmap of what will or should be done in the 2003 update.

Regional Options Evaluation Process

- (1) Identify reliability needs on a regional basis
- (2) Establish initial screening and evaluation criteria
- (3) Develop comprehensive list of regional options
- (4) Apply initial screening criteria
- (5) Identify parameters for evaluation criteria for each project (Data Collection)
- (6) Apply final evaluation criteria to projects
- (7) Develop Regional Water Management Plans

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Regional Options Evaluation Process

- (1) Identify reliability needs on a regional basis

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- Reliability needs are identified through the demand and supply assessments. Demand is estimated for the forecast year(s), then supplies are estimated based on "existing facilities" also known as the "without project" conditions. Water budgets are then created from the forecasted demands and supplies for each region. Any projected shortages then require the development of Water Management Options.

Water Demands and Supplies

Existing Facilities

		1995		2020	
		Average	Drought	Average	Drought
Information obtained from Ag, Urban and Environmental Water Use Activities	Applied Demands				
	Urban				
	Agricultural				
	Environmental				
	Other				
	Total Demands				
Information Obtained from Supply/Balance Activity	Supplies				
	Local				
	Local Imports				
	Ground Water				
	Reuse Ground Water				
	Reuse Surface Water				
	Recycled				
	CVP				
	Other Federal				
	SWP				
	Dedicated Natural Flows				
	Total Supplies				
	Balance				

Potential supply deficit to be met with Management Options

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<h3 style="color: blue;">Regional Options Evaluation Process</h3> <hr style="border: 1px solid blue;"/> <p>(1) Identify reliability needs on a regional basis (2) Establish: (a) Initial screening criteria</p> <p style="text-align: center; color: blue;">10</p>	<ul style="list-style-type: none"> ▪ An initial screening was utilized to screen out any clearly impractical options. This screening was used to reduce the number of options that needed to be evaluated in the more detailed final evaluation.
<h3 style="color: blue;">Initial Screening Criteria</h3> <hr style="border: 1px solid blue;"/> <ul style="list-style-type: none"> • Engineering <ul style="list-style-type: none"> – Not implementable with current technologies – Infeasible technologies relative to region – No increase in reliability • Economic <ul style="list-style-type: none"> – Extraordinarily high costs <p style="text-align: center; color: blue;">11</p>	<ul style="list-style-type: none"> ▪ For Example: A proposal to desalt ocean water for consumptive use in the desert regions is likely to have been screened out (or deferred) based on any of the engineering or economic criteria.
<h3 style="color: blue;">Initial Screening Criteria (Continued)</h3> <hr style="border: 1px solid blue;"/> <ul style="list-style-type: none"> • Environmental <ul style="list-style-type: none"> – Significant unmitigable impacts • Institutional/Legal <ul style="list-style-type: none"> – Unresolvable water rights conflicts – Unresolvable conflicts with existing statutes • Social/Third Party <ul style="list-style-type: none"> – Extraordinary socioeconomic impacts (source or use areas) <p style="text-align: center; color: blue;">12</p>	<p>For Example:</p> <ol style="list-style-type: none"> (1) A proposed on-stream surface storage project in the Yosemite Valley would be deferred based on significant unmitigable impacts and/or legal/institutional considerations. (2) A proposed water transfer could reduce area of origin cropped acreage; and thereby affect local tax base or labor conditions constituting a third party or social impact.

Regional Options Evaluation Process

(1) Identify reliability needs on a regional basis

(2) Establish:

(a) Initial screening criteria

(b) Final evaluation criteria

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- Each option retained from the initial screening was then subjected to the more detailed final evaluation. For each screening criterion, specific performance measures were established. Lastly, in an effort to maximize the objectivity of the evaluation, a numerical ranking was established relative to each criterion.

Final Evaluation Criteria

Evaluation Criteria	What is Measured?	How is it Measured?	Score
Engineering	Engineering feasibility Operational flexibility Drought year supply Implementation date Water quality limitations	Increase score for greater reliance upon current technologies Increase score for operational flexibility with existing facilities and/or other options Increase score for greater drought year yield/reliability Increase score for earlier implementation date Increase score for fewer water quality constraints	
Engineering Score			0 - 4
Cost	Financial costs Economic costs (cost/AF gain)	Increase score for the ability to finance option construction/implementation Increase score for lower overall cost/AF gain (including mitigation costs)	
Economics Score			0 - 4
Environmental	Environmental risk Irreversible commitment of resources Collective impacts Proximity to environmentally sensitive resources	Increase score for least amount of environmental risk Increase score for least amount of irreversible commitment of resources Increase score for least amount of collective impacts Increase score for little or no proximity to sensitive resources	
Environmental Score			0 - 4

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Final Evaluation Criteria (Continued)

Evaluation Criteria	What is Measured?	How is it Measured?	Score
Institutional/Legal	Permitting requirements Adverse institutional/legal effects upon water source areas Adverse institutional/legal effects upon water use areas Stakeholder consensus	Increase score for least amount of permit requirements Increase score for least amount of adverse institutional/legal effects Increase score for least amount of adverse institutional/legal effects Increase score for greater amount of stakeholder consensus	
Institutional/Legal Score			0 - 4
Social/Third Party	Adverse third party effects upon water source areas Adverse third party effects upon water use areas Adverse social and community effects	Increase score for least amount of adverse third party effects Increase score for least amount of adverse third party effects Increase score for least amount of adverse social and community effects	
Social/Third Party Score			0 - 4
Other Benefits	Ability to provide benefits in addition to water supply	Increase score for environmental benefits Increase score for flood control benefits Increase score for recreation benefits Increase score for energy benefits Increase score for additional benefits Increase score for improved compliance with health and safety regulations	
Other Benefits Score			0 - 4
Total Score			0 - 24

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<p>Regional Options Evaluation Process</p> <hr/> <p>(1) Identify reliability needs on a regional basis (2) Establish initial screening and evaluation criteria (3) Develop comprehensive list of regional options</p> <p>16</p>	<ul style="list-style-type: none"> DWR District offices preformed the majority of the data collection activities.
<p>Regional Options Evaluation Process</p> <hr/> <p>(1) Identify reliability needs on a regional basis (2) Establish initial screening and evaluation criteria (3) Develop comprehensive list of regional options (4) Apply initial screening criteria</p> <p>17</p>	<ul style="list-style-type: none"> A retained/deferred determination was made for each option.
<p>See Slide 18 (Page 9) for Partial Sample of Initial Screening Results from Bulletin 160-98</p>	

Partial Sample of Initial Screening Results from Bulletin 160-98

Options	San Luis Obispo	Santa Barbara	Option Initial Screening Criteria						
			Engineering	Economics	Environmental	Institutional/ Legal	Social/ Third party	Health	Overall
Urban Conservation									
Outdoor Water Use (<\$2000/AF)	X	X	R	R	R	R	R	R	Retain
Residential Indoor Water Use	X	X	R	R	R	R	R	R	Retain
Interior Commercial/Industrial/Institutional	X	X	R	R	R	R	R	R	Retain
Distribution System Losses	X	X	R	R	R	R	R	R	Retain
Agricultural Conservation									
Irrigation Management (<\$2600/AF)	X	X	D	D	D	D	D	D	Defer
Flexible Water Delivery	X	X	D	D	D	D	D	D	Defer
Canal Lining and Piping	X	X	D	D	D	D	D	D	Defer
Tailwater Recovery	X	X	D	D	D	D	D	D	Defer
ET Reduction	X	X	D	D	D	D	D	D	Defer
Lower Jack Reservoir	X		R	R	D	R	R	R	Defer
Santa Rita Reservoir	X		R	R	D	R	R	R	Defer
Enlargement of Salinas Reservoir	X		R	R	R	R	R	R	Retain
Enlargement of Lopez Reservoir	X		R	R	D	R	R	R	Defer
Enlargement of Nacimiento Reservoir	X		R	R	R	R	R	R	Retain
Enlargement of Cachuma Reservoir		X	R	R	R	R	R	R	Retain
Water Recycling (various sites)	X	X	R	R	R	R	R	R	Retain
Desalination (various sites)	X	X	R	R	R	R	R	R	Retain

R = Retained for further consideration
D = Deferred

Slide 18

California Water Plan - Update 2003
Water Management Options Overview

Regional Options Evaluation Process

- (1) Identify reliability needs on a regional basis
- (2) Establish initial screening and evaluation criteria
- (3) Develop comprehensive list of regional options
- (4) Apply initial screening criteria
- (5) Identify parameters for each project
(Data Collection and Analysis)

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- Note that the initial screening and final evaluation criteria (including performance measures) were largely established prior to data collection. Establishment of the criteria was a critical path to data collection since DWR needed to know what to collect in terms of specific option characteristics.

Data Collection and Analysis

- Options Characteristics
 - Engineering Studies
 - Operations Studies
 - Environmental Studies

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Engineering Studies

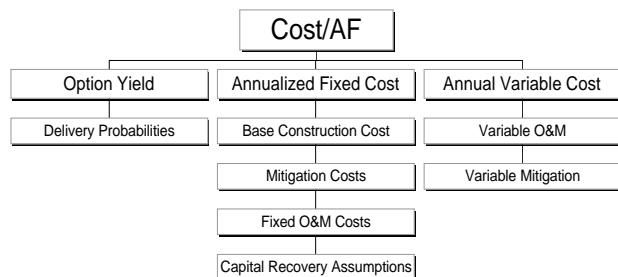
- | | |
|--------------------------------------|---------------------------------|
| • Construction Costs | • Project Yield |
| • Mitigation Costs | – Average Year |
| • OM&R Costs | – Drought Year |
| • Construction Period | – Exceedence Curve |
| • Land Acquisition Requirements | • Geology |
| • Relocations of Existing Facilities | – Seismic Potential |
| | – Soil Suitability |
| | • Proximity of Borrow Materials |
| | • Foundation Stability |
| | • Seepage Potential |

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- Project yield is perhaps the most difficult to uniformly establish for the gamut of options. Many assumptions and methodologies can be used to estimate yield. Some assumptions might include (but are not limited to): hydrology, cumulative impacts of other existing or future options, conveyance or wheeling capacity, storage capacity, demand and legal or institutional considerations.
- Some examples of geological considerations might be the percolation characteristics of a proposed direct-recharge groundwater storage project or the liquefaction potential of a proposed dam or levee foundation.

<p style="text-align: center;">Engineering Studies (Continued)</p> <hr/> <ul style="list-style-type: none"> • Energy Consumption and Production • Flood Management • Water Quality • Recreation • Other ... • Operating Considerations <ul style="list-style-type: none"> – Physical System – In-Stream Flow Requirements – Hydrologic – Reoperation <p style="text-align: center;">22</p>	<p>For Example:</p> <p>(1) Energy - Pump/storage facilities can consume electricity during off-peak hours and produce electricity during peak hours. Hence, the price differential can influence the economic viability of such a project.</p> <p>(2) Water Quality - Surface storage in the northern Delta can increase organic carbon concentrations (TTHM formation potential) thereby impacting drinking water quality and reliability with respect to treatment costs or blending requirements.</p> <p>(3) In-stream Flow Requirements can reduce the operational flexibility of options that require conveyance such as water transfers or storage diversions and releases.</p>
<p style="text-align: center;">Environmental Studies</p> <hr/> <p>Potentially Sensitive Natural Resources</p> <ul style="list-style-type: none"> • T&E Species • Fish, Wildlife and Plant Resources • Wetlands <p style="text-align: center;">23</p>	<p>For Example:</p> <p>(1) Threatened or Endangered Species – Some water management options might impact migratory corridors (on land or watercourses), sensitive habitat, etc</p> <p>(2) Fisheries – A proposed diversion from a watercourse can increase fish mortality – even if the diversion is fitted with fish screening provisions. Fish screens are less than 100% efficient due to direct losses through the diversion or predatory issues at a fish return outfall into the natural watercourse.</p>
<p style="text-align: center;">Environmental Studies (Continued)</p> <hr/> <p>Potential Direct and Indirect Social/Environmental Impacts</p> <ul style="list-style-type: none"> • Land Use • Cultural Resources • Water Quality • Air Quality • Third Party Impacts • Cumulative Impacts <p style="text-align: center;">24</p>	<p>For Example:</p> <p>(1) Cultural Resources - Usually involves Native American or other historically significant site.</p> <p>(2) Water Quality – A proposed diversion from a natural watercourse upstream of the Delta has the potential to increase salinity concentrations in the Delta (from the upstream migration of saline ocean water).</p> <p>(3) Air Quality – The extraction component of a groundwater bank might utilize diesel pump drivers. Therefore, a permit from an Air Quality Management District might be required.</p>

Regional Options Evaluation Process Economic Analysis



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- An economic analysis was performed to estimate the unit water cost (\$/AF) associated with each option. This analysis helped to “standardize” the unit costs with consistent methodology and assumptions that were applied uniformly to all options.
- The analysis consists of three components: (1) Option Yield – the amount of beneficial water expected to be realized from implementation of said option; (2) Annualized Fixed Costs - capital recovery, environmental mitigation and operation and maintenance costs; and (3) Annual Variable Costs – variable O&M and mitigation costs.
- Costs were broken into fixed and variable to account for the options that will operate (incur costs or produce yield) intermittently based on water year type. For example, a desalination plant might operate only during drought years; whereas a surface storage facility might operate every year. Reference Economic Analysis table on page 13.

Economic Analysis Cost per Acre-Foot

Option	Option Yield					Fixed Costs								
	Option Yield		Delivery Probability		Option Deliveries (Weighted)	Option Economic Life	Capital Recovery Factor	Year of Cost Estimate	Base Capital Cost	Mitigation Cost	Total Capital Cost	Annual Cost	Fixed O&M	Total Annual Fixed Cost
	Average Year	Drought Year	Average Year	Drought Year										
	TAF	TAF	%	%	TAF	50 or 25 Years			\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
					(2 X 4) + (3 X 5)						10 + 11			12 + 13 + 14
Water Recycling Reclamation Plant Expansion														
Ground Water/Conjunctive Use Enhanced Ground Water Recharge Basin XYZ														
New Reservoirs/Conveyance Facilities XYZ Distribution System Lake Enlargement New Canyon Dam														
Desalination Project X MGD Desalination														
Imports Water Transfers SWP (Branch X Extension)														

Annual Variable Costs									Cost per Acre-Foot				
O&M	Mitigation	Total Average Year Variable Cost	Average Year Variable Weighted Cost	O&M	Mitigation	Total Average Year Variable Cost	Drought Year Variable Weighted Cost	Total Weighted Variable Cost	Annual Fixed Cost/Weighted Deliveries	Weighted Variable Cost/Weighted Deliveries	Weighted Cost/Acre- Foot	USBR Composite Cost Index	Cost Per Acre-Foot
\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000					1995 Dollars
16	17	18	19	20	21	22	23	24	25	26	27	28	29
		16 + 17	4 X 18			20 + 21	22 X 5	19 + 23	15/6	24/6	25 + 26		27 X 28

California Water Plan - Update 2003
Water Management Options Overview

<p style="text-align: center;">Regional Options Evaluation Process Economic Analysis - Option Yield</p> <hr/> <ul style="list-style-type: none"> • Yield was divided into average and drought water years • Probability of specific water year occurrences were estimated • Option deliveries were then weighted by probabilities <p style="text-align: center;">27</p>	<ul style="list-style-type: none"> ▪ For this analysis, option yield was differentiated by water year type – average and drought. Certain options are designed (or prescribed) to operate intermittently based on water year type – due to operation cost, hydrology, legal/institutional framework, etc. For example, a groundwater bank is likely to engage in extraction operations during drought years and recharge during wet years. See columns 2 and 3 in Economic Analysis table. ▪ The probability of an “average” water year occurrence was based on the combined likelihood of an above average or wet year; while the drought water year was based on the likelihood of a dry or critical year as defined by the Sacramento River Index, the San Joaquin River Index or the Eight River Index. See columns 3 and 4 in Economic Analysis table.
<p style="text-align: center;">Regional Options Evaluation Process Economic Analysis - Fixed Costs</p> <hr/> <ul style="list-style-type: none"> • Base capital, mitigation and O&M costs were developed into equivalent annual costs <p style="text-align: center;">28</p>	<ul style="list-style-type: none"> ▪ See columns 7 and 15 in Economic Analysis table. ▪ The base capital costs were annualized using a 6% discount rate over the assumed project life.
<p style="text-align: center;">Regional Options Evaluation Process Economic Analysis - Annual Variable Costs</p> <hr/> <ul style="list-style-type: none"> • Consists of annual O&M and annual mitigation • Water year specific (Average and Drought) • Total variable cost was weighted by water year probabilities <p style="text-align: center;">29</p>	<ul style="list-style-type: none"> ▪ See columns 16 and 24 in Economic Analysis table.

Regional Options Evaluation Process
Economic Analysis - Cost/Acre-Foot

- Total unit water cost equals annualized fixed cost/weighted deliveries plus annual variable cost/weighted deliveries
- Cost estimates were indexed to 1995 dollars using the U.S.B.R. composite construction index.

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- See columns 25 and 29 in Economic Analysis table.

Regional Options Evaluation Process

- (1) Identify reliability needs on a regional basis
- (2) Establish initial screening and evaluation criteria
- (3) Develop comprehensive list of regional options
- (4) Apply initial screening criteria
- (5) Identify parameters for evaluation criteria for each project (Data Collection)
- (6) Apply final evaluation criteria to projects

- A numerical ranking was assigned for each individual option based on the results of the data collection.

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Partial Sample of Regional Options Evaluation Results from Bulletin 160-98

Option Category	Option Group	Option Evaluation Scores							Gain	
		Engin.	Econ.	Environ.	Institut./ Legal	Social/ Third Party	Other Benefits	Total	Average (TAF)	Drought (TAF)
Modify Existing Reservoirs										
Modify Nacimiento Spillway	Group I	4	4	4	4	4	0	20	20	20
Inter-Lake Tunnel Between Nacimiento and San Antonio Reservoirs	Group I	4	4	3	4	4	0	19	20	20
Subtotal		4	4	4	4	4	0	20	40	40
New Reservoirs/Conveyance Facilities										
College Lake	Group I	3	3	2	1	3	0	12	3	0
Coastal Distribution System	Group I	3	4	3	3	3	0	16	NA	NA
Pescadero Reservoir	Group I	3	3	2	1	3	0	12	10	0
Chalone Canyon Dam	Group I	3	2	3	3	3	0	14		
Subtotal		3	3	3	2	3	0	14		
New Los Padres Reservoir	Group I	3	2	3	1	3	2	14	11	11
Concub Canyon Reservoir	Group II	3	2	2	1	3	0	11	10	0
Bolsa De San Cayetano Reservoir	Group II	3	2	2	1	3	0	11		
Vaqueros Canyon Dam	Group II	3	1	1	2	2	0	9		
Subtotal		3	2	2	1	3	1	11	11	11
Feeder Streams (Various Sites)	Groups I-III	2	2	3	2	3	0	12		
Gabilan Creek Dam	Group III	2	0	2	2	2	0	8	4	0
Subtotal		2	1	3	2	3	0	10		
North Valley Off-Stream Storage	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Conveyance (diversion, distribution pipeline)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Evaluation Results

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Regional Options Evaluation Process

- (1) Identify reliability needs on a regional basis
- (2) Establish initial screening and evaluation criteria
- (3) Develop comprehensive list of regional options
- (4) Apply initial screening criteria
- (5) Identify parameters for evaluation criteria for each project (Data Collection)
- (6) Apply final evaluation criteria to projects
- (7) Develop Regional Water Management Plans

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The regional water management plans were compiled based on the following steps:

- (1) The options were listed by numerical ranking.
- (2) The options were selected by order of ranking until the projected shortages were met.
- (3) The selected options were consolidated into broad categories for each plan.

Options Likely to Be Implemented by 2020 "Regional Water Management Plan"

Statewide Options
SWP and CVP

Option Category	Average	Drought
Shortages	65.0	161.0
Options		
Urban Conservation	3.0	3.0
Agricultural Conservation	0.0	0.0
Ground Water/Conjunctive Use	0.0	40.0
Water Recycling	16.0	16.0
Modify Existing Reservoirs	10.0	10.0
New Reservoirs/Conveyance Facilities	27.0	27.0
Desalination	0.0	15.0
Importation	4.0	2.0
Other	0.0	0.0
Total	60.0	113.0
Remaining Shortage	5.0	48.0

Part I
"What We Did"
Statewide Options Evaluation

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- This section highlights the methods used in the development of Bulletin 160-98. It is intended to provide base information for Advisory Committee use in the 2003 Water Plan Update Process. It is not intended to be a roadmap of what will or should be done in the 2003 update.

Statewide Options Evaluation Process

- (1) Develop comprehensive list of Statewide Options
- (2) Identify parameters for evaluation criteria for each project (Data Collection)
- (3) Identify and discuss potential benefits and impacts of each project

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Examples of Statewide Options

- Water Recycling
- Water Transfers
- Ag/Urban Water Conservation
- Conjunctive GW and SW Management
- System Reoperation
- Surface Storage (on and off-stream)
- Modify Existing Reservoirs
- Weather Modification
- Sediment Removal
- Vegetation Management
- Seawater Desalting

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<p style="text-align: center;">Part II "What We Heard" General Issues and Comments Regarding Bulletin 160-98</p> <p style="text-align: center;">38</p>	<ul style="list-style-type: none"> ▪ This section was drawn from comments received during either the 1999 workshops on B160-98 or the 2003 Water Plan Update scoping workshops held in early 2000. (The complete list was presented to you in your January 18, 2001 meeting materials) ▪ The section is meant to capture the range of perspectives that were offered by the public during those sessions. Many of these comments present significant matters for the Department and the Advisory Committee to discuss. The comments, however, come from vastly different, and occasionally even mutually-exclusive, perspectives, on how the 2003 Update could be or should be changed from the 1998 version. ▪ Inclusion of the comments should not be seen as an endorsement by the Department of the comment or agreement with its underlying premise, other than as a starting point for potential dialogue.
<p style="text-align: center;">General Issues and Comments Regarding Bulletin 160-98</p> <hr/> <ul style="list-style-type: none"> • Evaluate a range of alternative future scenarios • Evaluate an isolated facility • Use UC Davis' economic model CALVIN • Study water management plan that allocates water according to most economical use <p style="text-align: center;">39</p>	
<p style="text-align: center;">General Issues and Comments Regarding Bulletin 160-98</p> <hr/> <ul style="list-style-type: none"> • Consider storage ponds and small-scale dams • Consider dredging older reservoirs to increase capacity • Consider the potential impact of a watershed management on water resources management • Consider tiered pricing structures for agricultural water use <p style="text-align: center;">40</p>	

General Issues and Comments Regarding Bulletin 160-98

- Recognize and encourage willing-seller-buyer water transfers
- Examine the potential for greater gray water use
- Explore recycling and desalination technology
- Evaluate the impacts of changing crop types relative to water supplies, groundwater use, and price elasticity

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General Issues and Comments Regarding Bulletin 160-98

- Value short-term options over long-term options
- Value groundwater storage use over new surface storage
- Analyze benefits for paying beneficiaries
- Replace options ranking method
- Address existing infrastructure deficiencies in the State

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General Issues and Comments Regarding Bulletin 160-98

- Address impacts on future water demands by possible water bonds and CALFED incentives for conservation.
- Address the degree to which the programs included in the CALFED solution will go in meeting the projected needs.
- Incorporate CALFED measures that would increase future environmental water use.

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General Issues and Comments Regarding Bulletin 160-98

- Use water pricing to reduce urban water use
- Address potential additional recycling, efficiency improvements, and development of new technologies as a result of higher water prices
- Consider using price elasticity to drive more efficient use of water, especially during a dry period

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<p style="text-align: center;">Part III “What Would We Like Early Input On” (Process and Policy Issues)</p> <p style="text-align: center;">45</p>	<ul style="list-style-type: none"> ▪ This section lists issues that the Department believes need to be addressed relatively early in the update process, particularly in light of the Department’s statutory requirement to release, by January 1, 2002, a preliminary draft of the “assumptions and other estimates upon which the [2003 Update] will be based.” (See Water Code Section 10004.6, distributed in your 1.18.01 meeting binder). ▪ At the March 8, 2001, Advisory Committee meeting, Advisory Committee members will have the opportunity to discuss this list and make their own suggestions for additions or modifications.
<p style="text-align: center;">Process Issues to be Resolved</p> <hr/> <ul style="list-style-type: none"> • To what extent should the B160-98 evaluation process be used as a starting point for the 2003 Update? • What were the most useful elements of the options evaluations in B160-98? • How can we improve on deficiencies in B160-98? <p style="text-align: center;">46</p>	<ul style="list-style-type: none"> • Beyond producing a technically credible update, the Water Plan Project Team is committed to producing a practical and useful water management tool. How can we best assist water managers and decision-makers with future water management planning?
<p style="text-align: center;">Process Issues to be Resolved</p> <hr/> <ul style="list-style-type: none"> • Should/can any or all of the CALFED economic evaluation framework be adopted for the Water Plan Update options evaluation process? <p style="text-align: center;">47</p>	<ul style="list-style-type: none"> • CALFED has developed a systematic framework for the economic evaluation of statewide and regional water management options.

<p style="text-align: center;"><u>Process Issues to be Resolved</u></p> <hr/> <ul style="list-style-type: none"> • Should new options/issues be discussed and/or evaluated? <ul style="list-style-type: none"> – Hydroelectric Reoperation – Utility Divestiture – Water Pricing – Ecosystem Restoration (i.e. Environmental Water Account, Fish Passage Improvements) <p style="text-align: center;">48</p>	<ul style="list-style-type: none"> ▪ Proposed projects that primarily yield environmental benefits are, by definition, water management options. However, if subjected to the evaluation used in the B160-98 process, such options are likely to have been screened out due to a lack of economic viability. ▪ How can an objective evaluation be designed that takes this effect into account?
<p style="text-align: center;"><u>Process Issues to be Resolved</u></p> <hr/> <ul style="list-style-type: none"> • A data acquisition procedure needs to be developed. <p style="text-align: center;">49</p>	<ul style="list-style-type: none"> • A great deal of information needs to be collected, managed and analyzed. A vast array of information sources must be utilized including federal, state and local governments as well as municipalities and private water purveyors. Specifically, a comprehensive list of options and corresponding characteristics needs to be established.
<p style="text-align: center;"><u>Policy Issues to be Resolved</u></p> <hr/> <ul style="list-style-type: none"> • Relationship With CALFED <ul style="list-style-type: none"> – To what extent will the California Water Plan Options Evaluation consider/adhere to CALFED's Solution Principles, ROD, Programmatic EIS/EIR, etc? <p style="text-align: center;">50</p>	<ul style="list-style-type: none"> • CALFED has developed specific water management solution principles involving no redirection of impacts, durability, equitability, affordability and implementability. Should the Water Plan Update adhere to these principles or perform an independent analysis? • CALFED has produced a seven-year implementation plan in their August 2000 Record of Decision. Should the Water Plan Update assume that this plan is fully implemented in 2030? • The July 2000 Programmatic EIS/EIR specifies a preferred alternative. Should the Water Plan Update assume that the preferred alternative is fully implemented in 2030?

Potential Discussion Paper Topics

- (1) Options Evaluation Methodology and Assumptions for the California Water Plan - Update 2003
- (2) Scope of Options Evaluation
- (3) CALFED and the Water Plan Options Evaluation
- (4) Data Acquisition and Management Methodologies

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- (1) The **Options Evaluation Methodology and Assumptions for the Water Plan - Update 2003** discussion paper can take into consideration the issues presented in slide 46 on page 22. It can also be designed to meet the Water Management Options component the "Methodology and Assumptions" report that must be released by January 1, 2002.
- (2) **Scope of Options Evaluation** would primarily involve defining an option with particular regard to current issues such as: the energy crisis (i.e. hydroelectric reoperation or utility divestiture), environmental water management options (i.e. EWA, managed wetland development)
- (3) **CALFED and the Water Plan Update** can specify the framework regarding the similarity in evaluation procedures and assumptions.
- (4) **Data Acquisition and Management Methodologies** can help design and implement options surveys.